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The concept of empathy in personality theory is typically discussed under the rubric of vicarious emotional arousal. Attempts to delineate the interpersonal determinants of empathetic responsiveness have focused on the perceived similarity between model and observer. Numerous studies have found that perceived similarity with a model enhances the vicarious empathetic response of observers in both physiological and self-report response modes. In these studies, however, no distinction was made between the effects of behavioral outcome similarity and personal (attribute/phenotypic) similarity.

Recently, the operational definition of personal similarity has been experimentally questioned with the resultant conclusion that phenotypic similarity may actually be dependent upon fate-behavioral outcome expectancies. From this social learning perspective, perceived similarity acquires its arousal properties as a function of repeated analogous behavioral outcomes or consequences.

In the present investigation the relative influence of personal similarity and behavioral-outcome similarity on vicarious empathetic arousal were examined. Sixteen females interacted successively with two confederates, experimentally defined as either personally similar or dissimilar. Within an experimental session a subject experienced four behavioral outcomes, two concordant and two disconcordant with the confederate's outcome. Each outcome was followed by measurement of changes in galvanic skin response and heart rate. In addition, subjects completed two questionnaires at the conclusion of each session:

Mehrabian and Epstein's Empathy Scale and a rating scale which measured subjects' verbal reports of affective state following each behavioral outcome.

Contrary to previous studies, perceived personal similarity was not found to have consistent effects on the vicarious empathetic responses of subjects. Rather, the effect of personal similarity on vicarious empathetic arousal was evident only in interaction with the confederate's and subject's behavioral outcomes. Further, this triple interaction effect was restricted to decreases in heart rate responses when both the personally similar confederate and the subject won. Behavioral outcome similarity, however, augmented the vicarious responses (skin conductance and verbal reports) of subjects when they observed confederates experience negative consequences. The results of the inter- and intra-response mode correlations within and across experimental sessions were consistent with previous research findings. Specifically, minimal correlations were found between response modes within and across experimental sessions. In addition, an attenuated relationship was evident between the two autonomic measures assessed, heart rate and galvanic skin response. The most consistent measure of vicarious empathetic arousal was the subject's verbal report of her affective state. Generally, the results indicated that empathetic responsiveness cannot be considered a unitary concept. Empathy must be viewed as a construct whose accurate measurement should include the concurrent assessment of situational parameters and multiple response modes.

The Effects of Personal and Outcome Similarity on Physiological and Verbal Response Modes

by

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CHAPTER I

INTRODUCTION

The concept of empathy in personality theory is typically discussed under the rubric of vicarious emotional arousal. Two explanations for the empathetic process have been proposed. The cognitive-role taking approach (Dymond, 1949) assumes that empathetic arousal is a direct result of intuiting the experiences and affective states of another person (predictive empathy). In this theoretical system, the observer does not actually experience the emotion he is perceiving. Rather the extent and quality of empathetic arousal is operationally defined as the observer's ability to accurately predict and recognize the feelings of the individual he is observing.

In contrast, Stotland (1969) considers "predictive empathy" or the perception of another person's emotional state as an initial phase in a multi-faceted empathetic self-arousal process. An observer may empathize on the basis of cues from another individual whom the observer perceives to be experiencing a given emotion. This initial vicarious empathetic response is followed by the observer imagining himself experiencing the emotion he is perceiving by generalizing to similar emotionally arousing experiences of his own: an automatic stimulus generalization process.

Attempts to delineate the interpersonal determinants of empathetic responsiveness have focused on the perceived similarity between model and observer. Numerous studies have found that perceived similarity to a model enhances the vicarious empathetic response of observers in

both the physiological and self-report response modes (Stotland, 1969; Stotland & Dunn, 1963). In these studies, however, Stotland and his associates failed to differentiate between the effects of behavioral outcome similarity and personal (attribute/phenotypic) similarity. In Stotland's paradigm, therefore, merely telling a person that he shares traits or attributes in common with a confederate (personal similarity) is equivalent to demonstrating that their behavior has the same outcome or consequence (behavioral outcome similarity). Thus, experimental manipulations of either personal similarity or behavioral outcome similarity should be equally effective in initiating the automatic stimulus generalization process.

Recently the operational definition of personal similarity has been experimentally questioned (Brown, 1974; Hornstein, 1970; Sorrentino & Boutlier, 1974) with the resultant conclusion that personal similarity may actually be dependent upon fate -- behavioral outcome expectancies. More specifically, within a social learning-interactionist conceptualization of behavior (Bandura, 1969; Mischel, 1973a), similarity has been explained in terms of behavioral outcome expectancies in particular situational contexts (see Appendix A for a theoretical overview). People who have similar interests and characteristics will also share many experiences and outcomes in common. In this theoretical system, therefore, perceived similarity acquires its arousal properties as a function of repeated analogous behavioral outcomes or consequences (Bandura & Rosenthal, 1966).

In the present investigation the relative influences of personal (attribute/phenotypic) similarity and behavioral-outcome similarity on vicarious empathetic arousal were examined. Subjects interacted successively with two confederates, experimentally defined as either personally similar or dissimilar to the subject. Within an experimental session a subject experiences four behavioral outcomes, each outcome followed by an empathy test. The four behavioral outcomes were defined as: subject win -- confederate win; subject lose -- confederate win; subject win -- confederate lose; subject lose -- confederate lose. The empathy test consisted of the measurement of the physiological arousal which resulted from the subject observing the confederate purportedly receiving or avoiding shock. An interaction between personal similarity and behavioral-outcome similarity was predicted. Specifically, it was hypothesized that when a subject interacted with a "personally similar" confederate and experienced identical behavioral outcomes the largest empathetic response would be recorded. When the subject interacted with a "personally dissimilar" confederate and experienced different behavioral outcomes, the smallest empathetic response was expected.

In addition to assessing the physiological concomitants of vicarious empathetic arousal, the self-report mode of responding was systematically examined. Subjects completed two questionnaires at the conclusion of each experimental session: a paper and pencil scale purported to measure empathetic tendency (Mehrabian & Epstein, 1973); and an adjective rating scale designed to measure the subject's verbal

report of her affective state following each behavioral outcome. Since each subject completed the questionnaires twice, it was possible to determine the test-retest reliability of the empathy scale and the consistency of verbal report of empathetic arousal across experimental sessions.

In summary, the design of the present study allowed for the assessment of empathetic responsiveness in both the self-report and physiological response modes. By including both self-report and physiological responses as dependent measures, it was possible to determine the degree of relationship between the inter-response mode measures of vicarious empathetic arousal. In addition, since each subject participated in two experimental sessions, it was also possible to establish the degree of intra-response mode consistency of each dependent measure across experimental sessions. Based on research by Mischel (1968), Lang (1968) and Paul and Bernstein (1973), it was predicted that measures of empathetic arousal would be relatively consistent within a response mode across experimental sessions. Further, when numerous response modes of empathetic arousal are assessed, it was predicted that the inter-response mode consistency would be minimal.

CHAPTER II

METHOD

Subjects

Sixteen female students were randomly selected from a subject pool consisting of undergraduates enrolled in the introductory psychology course at the University of North Carolina at Greensboro. Subjects participated in partial fulfillment of their course requirements.

Apparatus

Galvanic Skin Response. Skin resistance was recorded with silver-silver chloride electrodes placed on the volar surface of the first and third fingers of the right hand. A Grass Model 79 polygraph was used and resistance changes in ohms were amplified by a FP1A preamplifier.

Heart Rate. Heart rate changes were monitored on a beat by beat basis utilizing a Grass 7P4A Tachograph Preamplifier. Electrodes attached to the right earlobe and left ankle recorded electrocardiographic (EKG) signals.

Task Panels and Monitoring Equipment. A "Central Control Board" (20"x14"x18") housed three lights, clearly visible to both subject and confederate. Each of these lights signalled the start of a different event during an experimental trial. Two white lights labelled "Start" and "Press" successively signalled each individual that a trial had begun and to press her reaction time button. A third amber light

prompted both the subject and the confederate to release their respective reaction time buttons.

Feedback specifying the outcome of each experimental trial was given individually to the subject and confederate via two pairs of lights located at the right and left hand corners of the central control board. These lights were labelled "Win" and "Lose" and were red and white, respectively: the pair on the left indicated the confederate's outcome and the pair on the right the subject's outcome. Two additional lights labelled "Moderately Painful Shock" and "Extremely Painful Shock" were centrally located on the board to supply visual feedback on trials when different intensities of shock were purportedly administered to the confederate.

Each participant made her behavioral response on a reaction time button mounted on a 5"x5" wooden stand, situated directly in front of her. The sequence of the various lights on the central control board was programmed by the experimenter utilizing Leigh-Valley solid state components. An intercom system allowed the experimenter to monitor the verbal behavior of all individuals throughout the experimental session.

Experimental Procedure

Each subject participated in two experimental sessions for a total of 90 minutes: a 45-minute session with a "personally similar" female confederate and a 45-minute session with a "personally dissimilar" female confederate.

At the beginning of each experimental session a subject and confederate were ushered into an electronically shielded room containing two chairs labelled "Subject A" and "Subject B," the central control board and two reaction time buttons. Participants were then told that one of them would function as "Subject A" and the other as "Subject B" and that Subject A would be receiving two levels of shock, moderate and extreme, throughout the experimental sessions. Each participant was informed that her role in the experiment would be randomly determined by drawing slips of paper and that she would maintain her selected role across both experimental sessions. Actually, the two slips of paper were both labelled "Subject B" so that the real subject always functioned as Subject B.

After the subject and the confederate were seated in the appropriate chairs, each was informed that she had the option of not participating in the research if the application of shock was aversive to her; no subject refused to particpate in the experiment. After a subject agreed to participate, electrodes for monitoring the physiological responses were attached to both participants. In addition, a shock electrode was placed on the left wrist of the confederate (Subject A). All electrodes placed upon the confederate were inoperative.

At this time the confederate received two "sample shocks": one at a "moderately painful intensity" and one at an "extremely painful intensity." The confederate did not actually receive shocks but feigned shock reception. During the sample shocks and throughout the experiment the confederate responded to each purported reception of a

specified shock intensity with a standardized verbalization and a predetermined motor response. After the sample shocks were given, taped instructions were broadcasted to both individuals (see Appendix B).

These instructions described the experimental procedure under the guise of a research project whose major impetus was to test hypotheses concerning the effects of shock on reaction time. Subjects were informed that they were not competing against each other, but were responding against a predetermined experimental criterion. Whether or not each subject perceived herself as being personally similar or dissimilar to her experimental partner was manipulated by inserting the terms "personally similar" or "personally dissimilar" at appropriate points in the instructions. Subjects interacted with a different confederate during each of the two experimental sessions. Half of the subjects interacted with a personally similar confederate during the first experimental session and with a personally dissimilar confederate during the second session. For the remaining subjects the order was reversed.

All subjects completed a self-report questionnaire and an empathy scale (Mehrabian & Epstein, 1973) at the conclusion of each experimental session (see Appendices C and D).

Each subject participated in 32 trials: 16 under the personally similar condition and 16 under the personally dissimilar condition. Each trial consisted of a succession of four stimulus events. The onset of the start light signalled the initiation of each trial and was followed 10 seconds later by the press light, prompting both

participants to depress their reaction time keys. The passing of another 10-second interval marked the onset of the release light, cueing both persons to release their reaction time keys as fast as possible. Feedback lights informed the subject and confederate of the outcome of their behavioral responses -- win or lose. In addition, one of two lights labelled "Moderately Painful Shock" or "Extremely Painful Shock" flashed, designating the intensity of shock Subject A (confederate) supposedly received, if it was a lose trial. Subjects experienced four behavioral outcomes, four times under each similarity condition; the order in which the outcomes occurred was randomly determined.

Dependent Measures

Physiological Responses. Two physiological indices, heart rate and galvanic skin response, were monitored continuously throughout each experimental session.

Empathy Scale. At the conclusion of each experimental session all subjects were asked to fill out a paper and pencil mood questionnaire (Mehrabian & Epstein, 1973) purported to measure empathetic tendency.

Self-Report Questionnaire. Each subject completed a questionnaire after each experimental session. Subjects were asked to rate how empathetic, aroused and happy they felt during each of the four behavioral outcomes. An additional question attached to the post-second session questionnaire asked subjects to specify to which "Subject A" they felt more personally similar.

Experimental Design

The design was a 2x2x2x2x4x5. The experimental conditions were delineated by one between-subjects variable, order (two levels), and five within-subjects variables, personal similarity (two levels), subject behavioral outcome (two levels), confederate behavioral outcome (two levels), trials (four levels), and observations (five levels).

Order. All subjects were scheduled for two 45-minute experimental sessions. Eight subjects were paired with a "personally similar" confederate during the first session and with a "personally dissimilar" confederate during the second session. For the remaining eight subjects the order was reversed.

Personal Similarity. Each subject was informed that she and the confederate had been selected to participate together in the experiment on the basis of their responses to a series of "personality screening questionnaires." A battery of questionnaires had been perfunctorily administered to all introductory psychology students at the beginning of the fall semester.

In the personal similarity condition subjects were told that a high correspondence existed between their questionnaire responses and the confederate's responses. For the personal dissimilarity condition subjects were informed that a low correspondence was found between their questionnaire responses and those of the confederate.

Subject and Confederate Behavioral Outcomes. A subject experienced four behavioral outcomes which were defined by her own outcome, win or

lose, confluent with the confederate's outcome, win or lose. Table 1 (see Appendix E) delineates the nature of these outcomes. Thus, the differential effects of the subject's behavioral outcome (win or lose) could be analyzed when the confederate won and when the confederate lost.

At the conclusion of every trial, the subject was informed of her own behavioral outcome, "Win" or "Lose," and her partner's behavioral outcome via the appropriate lights on the central control board. In addition, on trials where the confederate lost, the subject observed the confederate feigning shock reception and received visual feedback as to the supposed intensity of the shock administered, via the flashing of one of the two stimulus lights labelled "Moderately Painful Shock" or "Extremely Painful Shock."

Trials. A subject experienced each behavioral outcome four times (i.e., on four separate trials) under both the personally similar and personally dissimilar experimental conditions. Thus a subject participated in a total of 32 trials: 16 with a personally similar confederate; 16 with a personally dissimilar confederate.

An individual trial lasted for 50 seconds and consisted of the sequential flashing of four stimulus lights. Each of the lights flashed for 1 second. The first three lights, Start, Press, Release, were each followed by a 10-second inter-stimulus interval. The final light, Feedback, was followed by a 20-second post-feedback interval which preceded the initiation of the next trial.

Observations. Although each subject's physiological responses were continuously monitored throughout the entire experiment, the data critical to the questions posed in this experiment concerned each subject's affective state of arousal just prior to and following the behavioral outcome feedback on each trial. Accordingly, the mean basal level of arousal for each physiological index was determined for the 5-second period preceding feedback on each trial. In addition, the 20-second post-feedback interval was sectioned into five 4-second observations. Heart rate data during each observation period was quantified by determining the mean beat by beat fluctuation. Likewise, for galvanic skin response the mean resistance level in ohms was measured during each observation and converted to a conductance value in micromhos $(1/R \times 10^6)$ for statistical analysis.

For each physiological response mode measured, therefore, there were 40 observations at each behavioral outcome (five observations per trial, four trials per behavioral outcome across the two sessions) and a total of 160 observations per subject. Each physiological observation was arithmetically compared to its respective pre-feedback basal level, resulting in a change score which indicated both the magnitude of change from baseline and the direction of that change, positive = increase and negative = decrease.

The order in which subjects received all experimental conditions was sequentially balanced within and across subjects by means of a Latin square.

CHAPTER III

RESULTS

Physiological Dependent Measures

Two 2x2x2x4x5 repeated measures analyses of variance of the change scores for the physiological response modes, skin conductance and heart rate, were performed. These analyses considered the changes in physiological responsiveness for each subject as a function of personal similarity (2), confederate behavioral outcome (2), subject behavioral outcome (2), trials (4) and observations (5). Preliminary analyses revealed no significant order effects, therefore this variable was not included in subsequent tests.

Skin Conductance. The analysis of variance disclosed a significant confederate behavioral outcome x observations interaction ($F = 4.28$; $df = 4, 60$; $p < .01$). Newman Keuls analysis of this interaction revealed significantly greater responses at observations two, three, and four while observing a confederate lose than while observing a confederate win. In addition, when the confederate lost, observations two and three were significantly greater than observations one and five. However, when the confederate won, there was no difference between any of the five observation intervals. The means for this interaction are presented in Table 2 (see Appendix E).

This analysis also revealed significant main effects for confederate behavioral outcome ($F = 4.67$; $df = 1, 15$; $p < .05$) and observations ($F = 4.51$, $df = 4, 60$; $p < .01$). A larger response, evidenced by an increase in skin conductance, was recorded from subjects when

they observed their partner lose and purportedly receive shock than when they observed their partner win, thereby avoiding shock (Lose $\underline{M}$ = +13.0 micromhos; Win $\underline{M}$ = -9.50 micromhos). For observations, a Newman Keuls analysis revealed that the responses of subjects during the second and third 4-second intervals (observations 2 and 3) following the feedback light were significantly greater than during the fifth 4-second interval (observation 5). In addition, observation two was significantly greater than observations one, four, and five.

In order to determine if the subjects' skin conductance responses were differentially affected by their observing confederates feigning the reception of moderate versus extreme shock, an additional analysis of variance was performed: personal similarity (2) x subject behavioral outcome (2) x shock intensity (2) x trials (2) x observations (5). Significant main effects for shock intensity ($\underline{F}$ = 6.29; $\underline{df}$ = 1, 15; $\underline{p} < .05$), subject behavioral outcome ($\underline{F}$ = 8.77; $\underline{df}$ = 1, 15; $\underline{p} < .01$), and observations ($\underline{F}$ = 4.09; $\underline{df}$ = 4, 60; $\underline{p} < .01$) were disclosed. For the variable, shock intensity, a greater increase in skin conductance was recorded from subjects when they observed their partner purportedly receive an extreme shock than when their partner received a moderate shock (Extreme $\underline{M}$ = +17.2 micromhos; Moderate $\underline{M}$ = +8.80 micromhos). Across the five observation intervals subjects experienced an abrupt increase in skin conductance, peaking during observation two ($\underline{M}$ = +17.9 micromhos), followed by a gradual return to baseline conditions. In addition, a significantly greater increase in skin conductance was recorded when the subject and confederate both lost

($\underline{M}$ = +17.0 micromhos) versus when the subject won and the confederate lost ($\underline{M}$ = +9.04 micromhos).

The finding of a significant main effect for subject behavioral outcome did not coincide with the results of the previous analysis. A possible explanation for the discrepant findings of these analyses resides in a substantially attenuated within-subject variability when only the two behavioral outcomes were compared. Therefore, in the original analysis, it is possible that large within-subject variability for the behavioral outcomes when the confederate won and the subject either won or lost masked the finding of a significant difference between the behavioral outcomes where the confederate lost and the subject either won or lost.

Heart Rate. This analysis of variance revealed a significant subject behavioral outcome x confederate behavioral outcome x personal similarity interaction ($\underline{F}$ = 5.15; $\underline{df}$ = 1, 15; $\underline{p} < .05$). This interaction is graphically presented in Figure 1 (see Appendix E). Figure 1, a and b, depicts the mean change in heart rate (beats/minute) for each subject x confederate behavioral outcome: Figure 1a for the experimental session in which the subject interacted with a personally similar confederate; Figure 1b for the experimental session in which the subject interacted with a personally dissimilar confederate.

Newman Keuls analyses of the triple interaction were performed. Examination of the subject behavioral outcome x confederate behavioral outcome interaction for the personally similar condition (Figure 1a)

revealed that when the similar confederate won, the subjects behavioral outcome had a significant differential effect on the magnitude and direction of heart rate change. Specifically, when both the subject and confederate won a substantial decrease in heart rate was observed ($\underline{M}$ = -10.0 beats/minute), while the subject losing and the confederate winning resulted in a slight increase ($\underline{M}$ = +3.5 beats/minute). However, when the confederate lost the subject's behavioral outcome, win or lose, did not exert a differential effect on heart rate responses.

Furthermore, when subjects themselves lost while observing a personally similar confederate, the confederate's losing resulted in a significantly greater increase in heart rate (subject lose, confederate lose $\underline{M}$ = +16.6 beats/minute; subject lose, confederate win $\underline{M}$ = +3.46 beats/minute). When subjects won the confederate's behavioral outcome also exerted a significant differential effect on heart rate responses. Specifically, the subject and confederate both winning resulted in an abrupt decrease in heart rate ($\underline{M}$ = -10.0 beats/minute) relative to the outcome in which the subject wins and the confederate loses ($\underline{M}$ = +11.2 beats/minute).

Examination of the confederate behavioral outcome x subject behavioral outcome interaction for the personally dissimilar condition (Figure 1b) revealed a different pattern of heart rate responses than did the personally similar condition. When the dissimilar confederate won or lost, the subjects behavioral outcome had no differential effect on the magnitude or direction of heart rate change. In addition, when the subjects won or lost, the confederate's outcome did not effect

significant changes in heart rate responses. Figure 1b, however, suggests that when the subject lost the confederate's losing produced a greater increase in heart rate than when the confederate won, although this result did not attain significance at .05 level ($p < .10$).

Finally, a comparison between the personally similar and personally dissimilar conditions revealed a significant difference in heart rate for subjects who won and observed their personally similar partner win ($M = -10.1$ beats/minute) versus when these same subjects won and observed their personally dissimilar partner win ($M = +14.1$ beats/minute).

The analysis of variance also disclosed a significant confederate behavioral outcome x observation interaction ($F = 3.25$; $df = 4, 60$; $p < .05$), a significant trials x observation interaction ($F = 2.06$; $df = 12, 180$; $p < .05$), and a significant main effect for observations ($F = 11.06$; $df = 4, 60$; $p < .01$).

Newman Keuls analyses of the confederate outcome x observation interaction revealed that at observations three and four, observing a confederate win resulted in significant decreases in the subjects' heart rate when compared to observing a confederate lose. Further post hoc analyses indicated that when confederates lost the responses of subjects at observations two, three and four were significantly greater than at observation five. When confederates won, heart rate peaked at observation two and abruptly decreased. Observations one and two were both significantly greater than observations three, four and five. The mean change in heart rate for the five observation

points for confederate win were +13.0, +21.5, -2.5, -3.6, -8.3, respectively while for the confederate lose condition the corresponding means were +15.4, 20.4, 22.4, 15.0, 3.3. Thus, in both the confederate win and confederate lose conditions, the subject exhibited approximately equivalent increases in heart rate. This increase, however, was maintained in the confederate lose conditions with a gradual return to near baseline levels preceding the following trial. In the confederate win condition, however, this initial increase was followed by a marked decrease to a below baseline level, which was maintained throughout the observation intervals.

The trials x observation interaction was characterized by an initial abrupt increase through observation two for all four trials followed by a gradual decrease to baseline for trials 2, 3 and 4 and a decrease to below baseline for trial 1. The magnitude of heart rate change was greatest on trial 3 and least on trial 1 across observation points. The pattern of change in heart rate responses for the observation variable was also marked by an initial increase in responding through observation two and subsequent decrease to baseline through observation five.

An additional analysis of variance was performed in order to determine if the observation of the confederate purportedly receiving moderate versus extreme shock effected differential heart rate changes in the conditions where the confederate lost. This analysis disclosed a significant main effect for observations ($F = 3.02$; $df = 4, 60$; $p < .05$). The pattern of responding across the five observations

consisted of an initial increase in heart rate through observation three followed by an abrupt decrease to baseline levels. The mean changes in heart rate in beats/minute for observations one through five were +15.4, +20.4, +22.4, +15.0, and +3.3, respectively. The pattern of responding for observations in this analysis, in which only the outcomes where the confederate lost were included, therefore, differed from the initial analysis in that the maximum increase was exhibited at observation three rather than observation two. No other main effects or interactions were significant at .05 level.

Empathy Scale

Each subject completed a mood questionnaire (Mebrabian & Epstein, 1973) purported to measure empathetic tendency at the conclusion of each experimental session. To assess the test-retest reliability of this paper and pencil scale, a Pearson product-moment coorelation was performed. A correlation coefficient of .90 ($p < .0001$) demonstrated that this scale was in fact a reliable measure of each subject's verbal report of empathetic tendency.

In addition, a t test was performed on the empathy scores for subjects as a function of the personal similarity manipulation. Subjects reported significantly more empathy ($t = 2.45$; $df = 30$; $p < .01$) after observing a personally similar confederate ($M = 54.3$) than after observing a personally dissimilar confederate ($M = 38.0$).

Inter-response mode concordance

In order to establish the degree of concordance between self-report and physiological indicants of empathetic tendency, a series of Pearson product-moment correlations were performed and are presented in Table 3 (see Appendix E). The magnitude of these correlations supports the prediction of a limited correspondence between response modes. Specifically, low correlations were obtained between the mean heart rate response and empathy scale score ($r = .18$; $p < .50$), and between the mean skin conductance response and empathy scale score ($r = .31$; $p < .23$) when subjects observed a personally similar confederate. Likewise, low correlations were obtained between the mean heart rate response and empathy scale score ($r = .29$; $p < .27$) and between the mean skin conductance response and empathy scale score ($r = .39$; $p < .12$) when subjects observed a personally dissimilar confederate.

Inter-physiological response mode concordance

Additional Pearson product-moment correlations were performed to determine the degree of concordance between heart rate and skin conductance response as measures of vicarious empathetic arousal. The correlation between skin conductance and heart rate for subjects observing a personally similar confederate was minimal ($r = .034$; $p < .89$). Similarly, an attenuated relationship was delineated between the two measures of physiological arousal when subjects observed a personally dissimilar confederate ($r = .14$; $p < .60$).

Intra-physiological response mode concordance

In addition, Pearson product-moment correlations were calculated to determine the consistency of skin conductance and heart rate as measures of vicarious empathetic arousal across experimental sessions. Minimal correlations were obtained for skin conductance ($r = .08$; $p < .76$) and heart rate responses ($r = .11$; $p < .67$) across the Personal Similarity experimental conditions. Interestingly, the correlation between basal skin conductance across sessions was .63 ($p < .008$), indicating that subjects exhibited relatively consistent levels of skin conductance at the onset of each session.

Self-Report Questionnaire

Each subject completed a questionnaire at the completion of every experimental session which asked each subject to rate how much arousal, empathy and happiness they experienced following each subject x confederate behavioral outcome. Three 2x2x2 repeated measures analyses of variance of the subjects' self-report of arousal, empathy and happiness were performed. These analyses considered the subject's self-rating on these three measures as a function of personal similarity (2), subject behavioral outcome (2), and confederate behavioral outcome (2).

The results of these analyses indicated a significant main effect for confederate outcome for subjects self-rating of arousal ($F = 6.37$; $df = 1, 15$; $p < .05$) and empathy ($F = 4.49$; $df = 1, 15$; $p < .06$). Subjects reported feeling more arousal and empathy while observing a confederate lose as compared to observing a confederate win. No other main effects or interactions were significant.

In order to provide a check on the effectiveness of the personal similarity manipulation subjects were asked to indicate which Subject A (confederate) they actually felt more similar to on the second post-session questionnaire. Fifteen of the sixteen subjects indicated that they felt more similar to the Subject A experimentally introduced as personally similar to them. The remaining subject recorded that she felt more similar to the Subject A experimentally introduced as personally dissimilar to her.

CHAPTER IV

DISCUSSION

Intra- and Inter-response Mode Consistency

The attenuated relationships uncovered in the present experiment for both inter-response and intra-response mode indicants of empathetic arousal dictate a closer scrutiny of the assumption that empathy specifically, and personality variables in general, can be viewed as unitary concepts. The lack of inter-response mode congruence within the same situation has been carefully documented by Mischel (1968). The disjunction existing among different measures of behavior, self-report, overt and physiological, has already been observed and analyzed in the assessment of anxiety (Paul & Bernstein, 1973; Lang, 1968). The finding of a limited correspondence between the physiological and self-report indices of empathetic arousal measured in the present study, therefore, should not be surprising. Interestingly, Stotland and his associates also found a response mode disjunction in their studies of the empathetic process and noted "the lack of consistency in the manifestations of empathy, both with respect to the physiological variables and self-ratings, is quite troublesome [Stotland, 1969, p. 312]."

Similarly, empirical support is available to substantiate the attenuated correspondence observed for the two physiological variables assessed in the present study, skin conductance and heart rate. Numerous studies have reported minimal inter-correlations among autonomic measures (Lacey, 1967; Averill, Olbrich, & Lazarus, 1972). It has been

demonstrated that the lack of correspondence between skin conductance and heart rate measures underscores the fact that these indices are related to independent processes (Roberts & Young, 1971). Specifically, changes in heart rate responses have been found to reflect the somatic activity of the organism (Obrist, Howard, Lawler, Galosy, Meyers, & Gaebelein, 1974; Elliott, 1974) while skin conductance measures seem to be functionally related to the arousal properties of the stimulus situation (Elliot, 1969). Within the physiological response mode, therefore, a behavior change can be manifested in various ways depending on the particular physiological variable measured.

Measures of empathetic response within response modes across experimental sessions also were not consistent. For each of the physiological measures of empathetic arousal, low correlations between subjects' responses in each experimental session were uncovered. The correlation between subjects' scores on the Mehrabian and Epstein (1973) self-report assessment of empathetic tendency was higher. Although the rank order of subjects remained the same, situational parameters did exert significant differential effects on the absolute magnitude of empathetic tendency across experimental sessions. These results for verbal response mode consistency support predictions based on a dispositional model of personality. The dispositional framework attributes this transituational consistency in rank order to underlying stable dispositions (traits) of the individual (Argyle & Little, 1972).

An alternative explanation has been posited by Kelly (1955) and Mischel (1973a). For these authors transituational consistency within

the verbal response mode reflects an individual's personal construct system. This personal construct system is developed through a history of encoding, categorizing and grouping information from stimulus inputs concerning one's own behavior (Estes, 1974). Once established, the individual's perception of his own behavior (personal construct system) may function independent of specific situational parameters, explaining the high verbal response mode consistency on self-report questionnaires.

Given that empathy can no longer be operationally defined as a unitary concept, it would be inappropriate to consider the effects of the variables manipulated in the present experiment as reflecting a unidimensional empathetic arousal process. Rather the results of the present study must be interpreted within the context of the particular response system being assessed. Even the most consistent result of the present study, the significant confederate outcome x observations interaction, evidenced a disjunction among response systems. Specifically, subjects exhibited higher skin conductance and heart rate responses while observing a confederate lose and thus receive shock. Observing a confederate win and thereby avoid shock, however, resulted in decreases in heart rate responding without concomitant changes in skin conductance responses. The absence of analgous results for the heart rate and skin conductance indices suggests, as noted above, that these two response systems may reflect different underlying mechanisms: with skin conductance reflecting the emotional state or arousal properties (cues) evident in the situation and heart rate more responsive to somatic changes within the organism.

In view of the finding that subjects exhibited different responses depending on the behavioral outcome of the confederate, the differential effect of personal similarity and subject behavioral outcome on the subjects' responses will be discussed separately for each confederate behavioral outcome, lose or win. In addition, discussing the results in this manner will allow for the data to be considered in light of previous research investigations which have generally examined empathetic arousal as a function of either positive or negative confederate behavioral outcomes.

Confederate Behavioral Outcome: Lose

In accordance with the recent research results of Bandura and Barab (1973) and Brown (1974), perceived personal similarity did not enhance the vicarious arousal (heart rate, skin conductance) or self-report responses of subjects observing a confederate lose and purportedly receive shock. Although Stotland (1969) reports that perceived personal similarity augmented vicarious arousal responses of subjects observing a confederate receive painful stimulation, these results were limited to the vasoconstriction responses of only later born female subjects.

Independent of personal similarity, the confederate's receipt of shock elevated subjects' skin conductance, with the greatest elevations occurring when the shock intensity was extreme. This suggests that subjects were in general differentially responsive to the confederate's plight.

The subject's behavioral outcome, as he observed a confederate lose, did have a differential effect on skin conductance changes, at least in the moderate versus extreme shock intensity analysis. Thus, when individuals experienced similar negative outcomes for their behavior, their empathetic arousal defined as a change in skin conductance was enhanced. Perhaps as Bandura (1969) has hypothesized, concordant negative behavioral outcomes facilitate the subject's perception of similarity to the confederate and thus augment the empathetic process.

Confederate Behavioral Outcome: Win

Contrary to the nonsignificant effect of perceived personal similarity on the vicarious empathetic arousal responses of subjects observing a confederate lose, perceived personal similarity did exert a significant effect on heart rate responses, though not skin conductance, when subjects observed the confererate win and thereby avoid shock reception. This effect was attributed to the markedly different changes in heart rate responses exhibited by subjects when both the personally similar confederate and subject won. When both the personally similar confederate and subject won, subjects' exhibited significant decreases in heart rate responding; in contrast, when the confederate won and the subject lost, heart rate tended to increase slightly. On the basis of research investigations conducted by Obrist and his colleagues (Obrist et al., 1974), one possible explanation for this decrease may be that heart rate reflects the somatic activity of the organism. This decrease, therefore, may have resulted from a

relaxation in muscle tension following the subject's observation of the similar confederate win and avoid shock. Skin conductance responses were not differentially affected by personal similarity or subject behavioral outcome when the confederate won.

It is interesting to speculate as to why the impact of personal similarity on empathetic responsiveness was restricted to the winning situation. Intuitively, it seems appropriate to assume that subjects can utilize many more affective cues in a positive or nonaversive situation than in a tense, emotionally upseting situation. Indeed, Bandura and Rosenthal (1966) found that subjects observing a confederate receive shock did not look at the confederate during the actual shock reception. In that study, subjects reported that they fixed their gaze on some innocuous piece of the experimental apparatus and relied on auditory feedback (the confederate's verbal indication of discomfort) to differentiate the reception of differing shock intensities. Perhaps in the present study, therefore, perceived personal similarity did not differentially affect empathetic responsiveness to the confederate losing because these responses were based solely on auditory cues. In the confederate win situation, however, the personal similarity manipulation may have exerted an effect on responsiveness as a result of utilization of both auditory and visual feedback (e.g., facial expressions) by a subject.

Interestingly, the verbal report of subjects did not reflect the differential response patterns recorded for heart rate. Rather, subjects did not report feeling significantly more happy when the

confederate won than when the confederate lost. Analogous results were found by Stotland, Shaver, and Crawford (reported in Stotland, 1969) when subjects observed personally similar confederates experience pleasure. Specifically, significant changes in vasoconstriction responses were evidenced by later born female subjects observing a confederate experience pleasure without consistent collateral changes in palmer sweat or self-report responding. The surprising absence of significant differences in self-report of affect when observing a confederate experience pleasure was attributed by Stotland (1969) to societal constraints which prohibit the display of vicarious pleasure.

A parsimonious interpretation for the results of the present study emerges if the experimental manipulations are considered from the subject's perspective rather than the experimenter's. The study was designed to asses the effects of experiencing identical or different behavioral outcomes (win or lose) prior to an empathy test (reception or avoidance of shock). However, the empathy tests may actually have been incorporated into the subject's perception of the confederate's behavioral outcome. Viewing the procedure of the study in this manner, subjects and confederates never actually experienced concordant consequences even if they exhibited the same behavioral outcome (i.e., win or lose). When the confederate and subject both lost, the confederate's behavior was consequated by shock reception. On the other hand, when the confederate won he avoided shock reception, a behavioral consequence the subject never underwent.

Perhaps behavioral similarity should be operationally divided into three components: individuals can perform the same behavior, receive identical or different feedback concerning their performance, and experience concordant or disconcordant consequences for performing the behavior. If behavioral similarity is viewed in this way, then in the present experiment the subject and confederate performed the same behavior (removed a finger from the reaction time key) and received identical or different feedback (win or lose), but always experienced disconcordant consequences. The results of the study, therefore, can be interpreted to suggest that when a subject receives identical feedback for performing the same behavior as the confederate, vicarious arousal reflected by changes in skin conductance and self-report will be facilitated during the subsequent observation of the confederate experiencing a punishing consequence for that behavior.

The original intent of the present study was to test Bandura's (1969) hypothesis that similarity as defined by concordant behavioral outcomes would enhance vicarious empathetic arousal. The design of the study, however, may not have provided an adequate test of this hypothesis. Although subjects and confederates did perform the same behavior and experience identical and different behavioral feedback prior to the empathy tests, one assumption implicit in Bandura's hypothesis was not met. Specifically, the within subject design utilized in the present experiment may have prevented subjects from <u>developing</u> a perception of similarity or dissimilarity to the confederate: a subject experienced both the same and different behavioral feedback during

an experimental session. A more appropriate test of Bandura's hypothesis would have entailed a between subject design including procedures that would have allowed subjects to experience a history of either similar or dissimilar behavioral feedback, as well as consequences, to the confederate prior to the empathy tests.

The design of the present study did, however, suggest that in the empathy test situation itself, vicarious arousal can be facilitated by having the subject and confederate receive the same feedback for performing identical behaviors. Explained in this way the results of the study provide support for Stotland, Sherman, and Shaver (1971) and Bandura (1969) conceptualizations of empathy as a self-arousal process. Stotland (1969) found that having subjects imagine themselves relative to imagining a model engaging in a particular behavior resulted in the enhancement of empathetic responding. Likewise, in the present study, performing the same behavior and receiving identical feedback may have enhanced a subject's empathetic response to similar confederates by facilitating the subject's imaginal representation of the confederate's behavioral consequence occurring to himself.

In conclusion, the results of the present study support a behavioral interpretation of empathy. Empathetic behavior was found to be manipulatable rather than a generalized and stable attribute of the individual. Furthermore, it is evident from the low inter- and intra-response mode consistencies that empathy cannot be considered as a unitary concept. Rather, empathy must be viewed as a construct whose accurate measurement must include the concurrent assessment of the effects of

situational factors on the verbal, overt, and physiological response modes of behavior (Eason & Dudley, 1970).

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Appendix A

Personality: A Social Learning-Interactionist Approach

The Person Versus the Situation -- A Pseudo Issue

The current proliferation of journal articles directed at the fundamental issues of personality structure and assessment attests to the controversial state of contemporary personality theory (Alker, 1972; Argyle & Little, 1972; Bem, 1972; Bowers, 1973; Endler, 1973; Mischel, 1973a,b; Wachtel, 1973a, b). The quest for answers concerning personality structure has not been a concerted or unifying endeavor. Rather, issues concerning personality seem to encourage separatistic polemics and to engender a "strategy of conducting psychological science by theoretical combat (Staats, 1971)." Indeed, the friction between differing theoretical orientations on how best to conceptualize personality has escalated this issue to the status of a conflict analogous to the nature-nurture question. As with the nature-nurture controversy, theoretical camps have been drawn, each supporting antagonistic and mutually exclusive "explanations" for the genesis and ontogeny of behavior. In addition, research procedures and statistical techniques have been selectively utilized to generate empirical evidence augmenting the validity of each competitive conceptualization of human behavior (Endler, 1973). This lack of reciprocity and cooperation has inhibited the mutual utilization of findings and developments, but adequately epitomizes the complexity of the issue under investigation.

Traditionally, questions pertaining to personality structure have been concerned with delineating the locus of the determinants of human behavior. Trait-dispositional or psychodynamic viewpoints have

considered the primary determinants of human behavior to reside within the individual (intrapsychic). As a result, proponents of these orientations have emphasized the pervasive, underlying dynamics of internal processes and structures (e.g., traits, motivational dispositions), denigrating the influences of situational parameters on behavior. In contrast, strict behavioristic approaches (Skinner, 1957; Farber, 1964) have looked for the determinants of human behavior outside of the individual by utilizing the principles of learning to functionally analyze the operative contingencies in environments. This controversy over the determinants and referents of behavior has been variously denoted as the trait versus environment or person versus situation issue.

Recently, the domain of dispute has shifted from the theoretical issue of the determinants of behavior to the empirical question of the stability of behavior across situations: trans-situational consistency versus situational specificity. Research has demonstrated that personalogists of various orientations can account for either result, stability or instability of behavior, via the basic assumptions of their respective theories (Allport, 1966; Mischel, 1968, 1969, 1973a, b). Various theorists have even posited that the situational specificity of behavior is itself a personality dimension (Alker, 1972; Bem, 1972). Questions concerning the relative importance of the person or the situation on subsequent behavior and of behavioral stability have been posed in the context of either/or statements. Phrased in this format they have become pseudo-issues and have stimulated futile polemics.

Bowers (1973) has reanalyzed eleven studies published since 1959 using a sources of variance procedure (Endler, 1973; Endler & Hunt, 1966, 1968, 1969; Endler et al., 1962). These studies sampled the behavior of individuals over a series of situations, across various response modes and were categorized by the type of dependent measures utilized: stimulus-response inventories; self-ratings; observations of overt behavior. The source of variance procedure partitioned the sources of variance into components that elucidated the percentage of variance attributable to persons, to situations, and to person x situation interactions. Thus the relative quantitative contributions of person, situation, and person x situation influences on behavior were determined. In general, person x situation interactions exerted more influence on behavior than either the person or the situation alone. Indeed, in a number of comparisons (eight of nine), the variance accounted for by the person x situation interaction was greater than the sum of the main effects for person and situation.

While the question of the relative importance of the person or the situation has become a moot one, the question of behavioral stability has likewise been consigned to a "scientific Valhalla" (Wachtel, 1973a, b). Indeed "the fact that behavior varies across different situations is not questioned by anyone, including classical trait theories (Mischel, 1973a, p. 254)." Therefore, it is essential that theoretical models not be evaluated on their recognition or failure to recognize "...variability in behavior from situation to situation (Wachtel, 1973b, p. 324)." Rather, a criterion of utility in both the assessment and

the prediction of behavior must be substituted as the essential component in the evaluation process. In addition, the current call for new advances in assessment (Peterson, 1968) and the documented disillusionment with traditional personality models (Mischel, 1973b) have underscored the need for a reformulation of personality paradigms along a utility dimension.

Reformulation: Social Learning-Interaction Model

Interaction studies (e.g., Argyle & Little, 1972; Endler & Hunt, 1966; Moos, 1968) have experimentally documented the extensive influence of person x situation interactions on behavior. More importantly, these studies have also empirically reiterated the discriminativeness and idiosyncratic organization of behavior within individuals (Endler & Hunt, 1969). The behavioral bases of the observed interactions, however, have not been empirically analyzed and explained. In the absence of such analysis the interaction model will most certainly be beset by the pitfalls that have emasculated other "personality" theories, such as construct reification and tautological insignificance.

At the present time a theoretical framework must be established that will facilitate the conceptualization, explanation, and analysis of person x situation interactions. Mischel has been catalytic in developing such a theoretical framework: a cognitive social learning reconceptualization of personality which "...shifts the unit of study from global traits inferred from behavioral signs to the individual's

cognitive activities and behavior patterns, studies in relation to the specific conditions that evoke, maintain and modify them and which they, in turn, change (Mischel, 1973a, p. 265)." Thus a cognitive-social learning viewpoint reestablishes the importance of studying person or organismic variables, an idiographic strategy, in the face of charges that subject variables are defunct in personality research (see Carlson, 1971).

A social learning-interaction model, such as Mischel's, can be seen as a reapproachment between the more traditional and the behavioristic conceptualizations of personality. At the empirical level the technology of behavioral analysis has allowed us to delineate the processes through which behaviors are acquired, evoked, maintained and modified by emphasing the situational referents of behavior (Bandura, 1969). From other areas of research it has become evident that the individual is not an empty organism, The Ghost in the Machine (Koestler, 1967), buffeted by situational forces.

Studies that demonstrate the potency of personal construct systems and implicit personality theories, in affecting behavior (e.g., Little & Stephens, 1973; Moos, 1968; Schneider, 1973) have underscored the necessity of a personality level of description. In addition, the impressive gains documented under the behavioral self-control and self-regulatory rubrics have demonstrated that individual personality systems do more then just mediate the effects of impinging stimulus inputs. Rather the individual is continusouly selecting, generating, maintaining and modifying distinctive behavior patterns (Rausch, 1965; Thorenson & Mahoney, 1974).

To summarize, the social learning-interaction model incorporates a personality level of analysis and defines social learning as a reciprocal influence process (person x situation). A fundamental premise of this paradigm is that an individual's behavior cannot be looked at in isolation. Rather, behavior should be considered in light of the individual's learning history which determines the idiosyncratic meaning, value and valence of stimuli and the current situational contingencies operative in the individual's environment.

Appendix B

Taped Instructions

The experiment in which you are going to participate today is concerned with the effects of shock on a reaction time task. It is not by chance that you particular individuals were selected from among all the Psychology 221 students to participate together in this experiment. In fact it is because you are so personally similar/dissimilar to each other that you are here now. You may remember that you and all your fellow students filled out a number of questionnaires at the beginning of the fall semester as part of a class session. One of these questionnaires was a Personality Screening Scale. The responses you made on this personality scale allowed us to determine your personality as you see yourself. A high/low level of correspondence existed between your responses on this personality scale. In other words from your answers on the personality scale and other sources of information, we have determined that you are personally similar/dissimilar to each other.

To experimentally test our hypothesis about the effects of shock on reaction time, therefore, we specifically selected people who were personally similar/dissimilar to each other. You will both take part in two 45-minute experimental sessions. Today you will respond with an individual who is personally similar/dissimilar to yourself. During the next session you will be paired with someone who is personally similar/dissimilar to you.

Experimental Instructions

On the table before you there is a large wooden box labeled the "Central Control Board" containing a number of lights. In addition you have both been supplied with individual reaction time buttons. When you see the start button on the central control board flash, this signals the beginning of an experimental trial. The next light you will see, the press light, is your cue to depress the reaction time button in front of you. When the release light flashes lift your finger from the reaction time button as quickly as you possibly can. You will know whether you won or lost on a particular trial by observing which of the two feedback lights flash. Your particular feedback lights are located on either the left or right hand side of the central control board, depending on whether you are Subject A or Subject B. If you are Subject A your feedback lights are on the upper left hand side of the central control board; if you are Subject B your feedback lights are located on the upper right hand side of the central control board.

It is important that you both understand that you are not competing against each other, but rather that you both are responding against a predetermined experimental criterion. We developed this

criterion before we began running the experiment you are presently engaged in. By accumulating reaction time data on numerous individuals we were able to determine what the mean or average reaction time of a subject should be. If on a particular trial your reaction time is too slow compared to our experimental criterion, your Lose light will flash; however, if your reaction time is within our criterion your Win light will flash. In addition, each time Subject A loses, he will receive a shock of either a moderately painful intensity or an extremely painful intensity. You will both be able to determine which intensity Subject A receives by observing which of the lights labelled "Moderately painful" or "Extremely painful" located on the central control board flashes. To summarize, when the start light flashes the trial has begun. The press light is your signal to depress the reaction time button in front of you and to hold it down until the release light flashes. After the release light comes on look at your feedback lights to determine if you have won or lost and at the lights labelled "Moderately painful" and "Extremely painful" to find out which shock intensity Subject A may receive. Remember you are not competing against each other but rather against predetermined experimental criterion. One last request! Since we are monitoring your physiological responses, it is essential that you stay as motionless as you possibly can throughout the experimental session. Thank You. Are there any questions? Please watch for the start light.

Appendix C

Self-Report Questionnaire

General Instructions: This questionnaire will help us determine how shock effects learning. Please answer all the questions carefully!

CIRCLE THE LINE WHICH REPRESENTS HOW YOU FEEL.

1. If you had had the shock electrode on instead of Subject A, how do you think this would have affected your reaction time?

much slower_____ much faster

2. Rate how you felt when you and Subject A both lost and she received shock:

highly aroused_____not aroused
happy_____unhappy
empathetic_____not empathetic

3. Did the shocks seem to bother Subject A?

yes, a great deal_____ no, not at all

4. Rate how you felt when you lost and your fellow subject won:

highly aroused_____not aroused
happy_____unhappy
empathetic_____not empathetic

5. Did it bother you to watch Subject A receive a shock?

yes, a great deal_____ no, not at all

6. Rate how you felt when you won and Subject A lost and received shock:

highly aroused _____ not aroused
happy _____ unhappy
empathetic _____ not empathetic

7. Rate how you felt when you won and Subject A won and did not receive shock:

highly aroused _____ not aroused
happy _____ unhappy
empathetic _____ not empathetic

8. Which of the two subjects you interacted with during this experiment did you feel more similar to:

_____ Similar Subject A

_____ Dissimilar Subject A

Appendix D

Empathy Scale

Listed below are a number of statements concerning personal attitudes and traits. For each item decide how strongly you agree or disagree. Please use the following scoring system:

1 = Very strong agreement
2 = Strong agreement
3 = Moderate agreement
4 = Slight agreement
5 = Slight disagreement
6 = Moderate disagreement
7 = Strong disagreement
8 = Very strong disagreement

Place the number corresponding to how you feel next to the statement.

_____ 1. It makes me sad to see a lonely stranger in a group.
_____ 2. People make too much of the feelings and sensitivity of animals.
_____ 3. I often find public displays of affection annoying.
_____ 4. I am annoyed by unhappy people who are just sorry for themselves.
_____ 5. I become nervous if others around me seem to be nervous.
_____ 6. I find it silly for people to cry out of happiness.
_____ 7. I tend to get emotionally involved with a friend's problems.
_____ 8. Sometimes the words of a love song can move me deeply.
_____ 9. I tend to lose control when I am bringing bad news to people.
_____ 10. The people around me have a great influence on my moods.
_____ 11. Most foreigners I have met seemed cool and unemotional.
_____ 12. I would rather be a social worker than work in a job training center.
_____ 13. I don't get upset just because a friend is acting upset.
_____ 14. I like to watch people open presents.
_____ 15. Lonely people are probably unfriendly.
_____ 16. Seeing people cry upsets me.
_____ 17. Some songs make me happy.
_____ 18. I really get involved with the feelings of the characters in a novel.
_____ 19. I get very angry when I see someone being ill-treated.
_____ 20. I am able to remain calm even though those around me worry.
_____ 21. When a friend starts to talk about his problems, I try to steer the conversation to something else.
_____ 22. Another's laughter is not catching for me.
_____ 23. Sometimes at the movies I am amused by the amount of crying and sniffling around me.
_____ 24. I am able to make decisions without being influenced by people's feelings.

____ 25. I cannot continue to feel OK if people around me are depressed.
____ 26. It is hard for me to see how some things upset people so much.
____ 27. I am very upset when I see an animal in pain.
____ 28. Becoming involved in books or movies is a little silly.
____ 29. It upsets me to see helpless old people.
____ 30. I become more irritated than sympathetic when I see someone's tears.
____ 31. I become very involved when I watch a movie.
____ 32. I often find that I can remain cool in spite of the excitement around me.
____ 33. Little children sometimes cry for no apparent reason.

Appendix E

Tables and Figure

Table 1

Behavioral Outcomes

Confederate Outcome	Subject Outcome	Shock to Confederate
Win	Win	Absent
Win	Lose	Absent
Lose	Win	Present
Lose	Lose	Present

Table 2

Confederate Behavioral Outcome X Observation Interaction:

Mean Skin Conductance Change Scores in Micromhos

Observations	1	2	3	4	5
Confederate Win	-6.80	-6.30	-9.90	-11.70	-12.70
Confederate Lose	+9.80	+17.90	+15.90	+12.60	+9.20

Table 3

Inter-Response Mode Concordance

	Personal Dissimilarity Condition		Personal Similarity Condition	
	Empathy Scale	Skin Conductance	Empathy Scale	Skin Conductance
Heart rate	.29 ($p < .27$)	.03 ($p < .89$)	.18 ($p < .50$)	.14 ($p < .60$)
Skin conductance	.39 ($p < .12$)	---	.31 ($p < .23$)	---

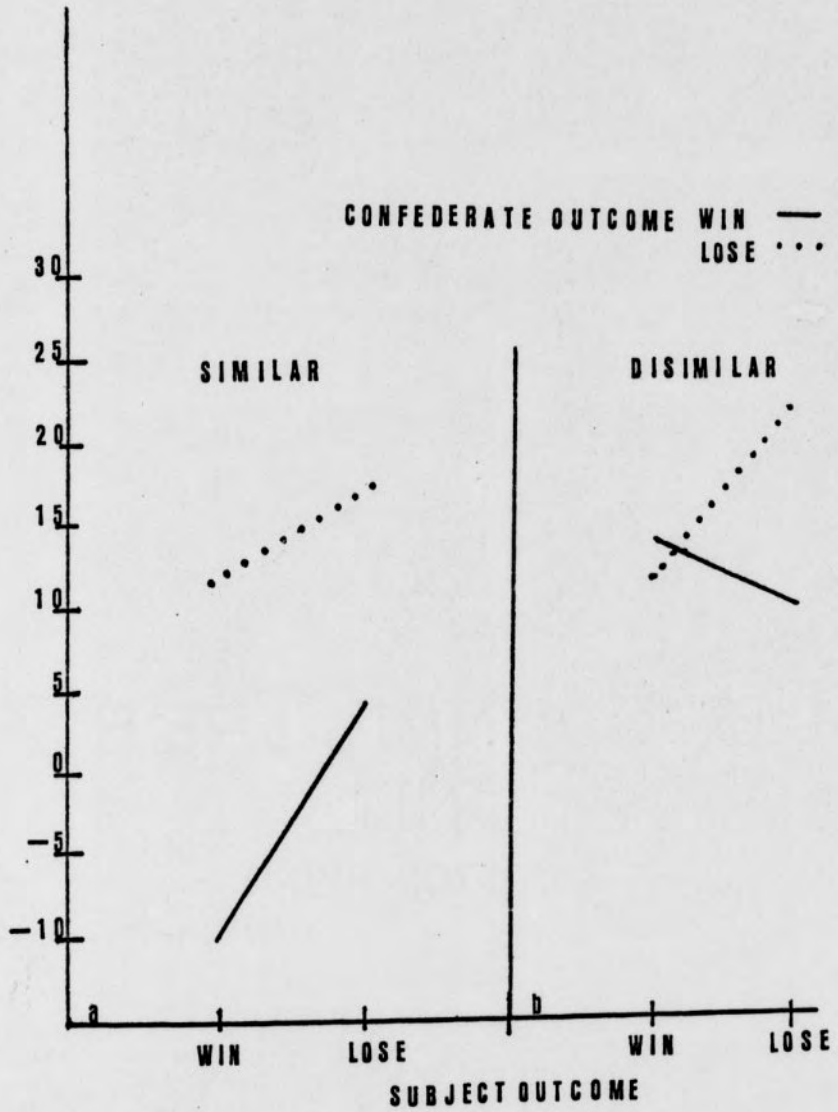

Figure 1, a and b. Subject behavioral outcome x confederate behavioral outcome x personal similarity interaction: Mean Heart Rate Changes in Beats/minute.